1: Warner E-5 (1926-1929) 1937
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trade. (2) Scraping with the bivalve shell connects the mangel with the sexual division of labor, for women gather the shells, this not being considered man's work. (3) Hafting it with resin takes in the whole process of preparing the sap of a tree and forming it into a cement. (5) Hafting with fiber string brings in the process of using a digging stick to pull up the roots, breaking and cutting them up, soaking them in water and drying by a fire before a woman twists them into string. The spear-thrower presupposes a spear. If a stone spear is used once, then the spear-thrower connects with stone technique, with fiber string making, with the use of fire to straighten a shaft, etc.

All this could be carried much further, but it can be seen that not only are the various objects and processes of native material culture mutually dependent and intricately articulated, but also the materials with which these artifacts are made are connected into a unified system. The aborigine thus has, as one method (in addition to other methods) of classifying all objects of nature, the use to which those objects are put in the technology. Every native knows for what this tree or that stone is used. He usually thinks of them with such reference, or as elements in his ceremony and myth, or both.

2. *The Materials Selected from the Environment*

Murngin technology will be considered from three primary points of view: (1) the materials selected from the natural environment, such as kinds of wood, stone, vegetable, and animal products utilized in forming the various objects made by the culture; (2) the aims and methods of the makers of the various artifacts; and (3) the objects themselves and their functions in the society.

Vegetable, mineral, and animal materials, in the order of their quantitative importance (foods not being under consideration), are used in making the various artifacts of the northeast Arnhem Land culture.

The vegetable material consists of many varieties. The trees of the mangrove jungles with their long, slender, light trunks are utilized in the manufacture of spear shafts; their peculiarly curved roots, lying on the top of the oozing mud along the tidal rivers, are used in the manufacture of boomerangs and in the formation of pick-like clubs. The eucalyptus forests contribute bark, sap, and wood, and the Melaleuca (paper bark) tree gives its bark and wood. Every kind of tree found in the environment is used for some purpose. Wood, bark, resin, sap, leaves and grass—all of these are formed into tools by which the native adapts himself to his natural and cultural environment.

1: Warner E-5 (1926-1929)1937
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313 Wood is chosen for its degree of hardness and weight and also for its shape according to the purposes of the object to be made. The main forms used are (1) long, slender, light (or heavy) shafts; (2) hollow logs; (3) roots with a well-defined arc; (4) long, straight, slender trunks with thick roots running off at a right angle from the shaft; (5) forked sticks; (6) ends of branches with many twigs and leaves; (7) any variety of dry wood; and (8) very large light wood tree trunks.

314 Three types of bark are used: (1) a long, thick, wide type found on the trunk of the larger eucalyptus; (2) thin paper-like bark from the Melaleuca; and (3) long thin fibers of root bark easily macerated.

Many varieties of leaves are technological material. They are usually [352] gathered in bundles by breaking off branches, but one large-leafed species is used singly as a plate on which to put fresh meat for cooking.

The long reeds of the water-lily ponds, spear grass particularly, and many other varieties of reeds are utilized.

237 The few animal materials used are, from land animals: kangaroo fat, kangaroo gut, kangaroo leg bones, bird feathers, bird bones (particularly leg), opossum fur, opossum gut and human hair; from sea animals: sting-ray prongs, fish and shark vertebrae, bivalve shells, and the melon shell.

Deposits of red ocher and pipe clay are mined along certain portions 317 of the seacoast. Yellow ocher is found in outcroppings. Round river 316 stones about the size of goose eggs are gathered. Diorite stones are also used. Quartzite is quarried from outcroppings. Ordinary earth and sand are used in making houses and ceremonial objects on the ground. Rock 342 ledges forming caves are utilized as shelters during the rainy season. 312 Rock basins which catch rain water are used as types of primitive cisterns to supply water in the absence of wells and fresh-water courses.

3. *General Description of Technical Methods Used in Making Raw Materials into Cultural Artifacts*

000 Only the general methods by which raw material is formed into artifacts will be discussed here. Each specific technique will be described in the section dealing with the articles manufactured.

412 The chief tools used with food are the ground stone axe,[4] a knife (formerly made of bone, but, since the Malay contacts, of iron), and a variety of bivalve shell.

322 Cylindrical wooden articles are made by cutting down a tree or

[4] The iron tomahawk is now used in its place.

1: Warner E-5 (1926-1929) 1957
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white birds' down is stuck on it. A red snake is painted with human blood from the bottom to the top of the emblem. On the top of the Yernerlindi is put a native companion feather headdress to symbolize the snake's head. The whole of the object is supposed to be the great totem snake. It is used only in the Gunabibi ceremony.

The Yernerlindi measures sixteen feet by one foot by seven and one-half inches.

Hollow Cylindrical Objects.—All such objects are made from trees whose centers have been eaten out by termites until only a hollow shell remains. The size of the tree used depends on the purposes for which the object is required.

The native walks through a eucalyptus grove thumping trees until he finds one whose sound indicates that it is hollow. The tree is ringed a few feet from the ground. When the tree falls the trunk is cut the proper length. A pole is then cut and used as a ramrod to clean the termite nest out of the interior.

The outer and inner bark are next cleaned off with an axe and any remaining pieces of bark scraped from the surface with the axe edge.

These hollow cylinders divide into three types: (1) ir-a-ki (wooden trumpet); (2) u-var (ceremonial drum); and (3) dai-mer-i ("coffin").

Iraki: There are three varieties of this object. The first is the ordinary long trumpet, which is about four feet long with a diameter of two and one-half inches. The smaller end of the log is made into a mouthpiece by whittling slightly.

A second type is much larger (six to eight feet long; six inches in diameter). It is used exclusively as a ceremonial object in the Djungguan ceremony. It represents Bapa Indi (father great), the Great Snake. Beeswax is put at the small end to form a mouthpiece.

The third type, which is seldom seen, is about two feet long and two and one-half inches in diameter. A hole is bored through the wall into the inner tube. The blower, instead of putting his lips at one end of the trumpet, places his mouth over the hole and blows. The sound is low and unformed.

Uvar: This drum is only a hollow log with no modification except painting. It ranges from four to six feet in length and is from seven to eight inches in diameter. It is beaten with a drum stick of pandanus leaves wrapped with the same material. The uvar is carried under the arm of a dancer in the Ulmark ceremony and is used at no other time. The sound made by the beating is the voice of the snake.

Daimer[i]: This coffin may be either a simple hollow cylinder or it may have two barbed prongs at the top. The length varies from six to fifteen feet, and the prongs from one and one-half to two feet. The diameter is about nine inches. Two holes directly opposite each other represent eyes of a mythical creature.

31 Mountford E-5 (1948) 1956 Oll7 Muragia Oll7

The skull,[21] which also has been painted with its totemic design, is placed in a string carrying-bag. Both the skull and the bark coffin containing the bones are carried from one camp to another by a near female relative of the dead man and suitably mourned over, so that the dead spirit will be happy. At night the bark coffin is placed on a pair of forked sticks, and the skull, in its carrying-bag, hung on a nearby tree.

(iii) *The Final Burial*

At the end of some months, after the old men have decided that the time is ripe for the final disposal of the bones, the brothers of the dead man cut down a hollow tree to make a log coffin and, after taking off the bark, paint on it the totemic design of the dead man.[22]

While the bones are being transferred from the bark to the log coffin the men perform the water dance. A tribal sister then digs a hole in the ground, the log coffin is placed in the hole in an upright position,[23] the earth packed tightly round the base, and the burial rituals are over. Sometimes the small bones of the hands and feet are given to near relatives as mementoes. The skull, being too large to go in the log coffin, is usually broken up and thrown away.

Four bark paintings illustrate the burial rituals: Pl. 100A, the ceremonies at death; Pl. 99D, the cleansing of the bones and the placing in the bark coffin; Pl. 100B, the transference of the bones to the log coffin; and Pl. 101D, a complete sequence of burial.

On Pl. 100A, panel *a*, a newly deceased man is surrounded by mourning women. On panel *b*, the dead man is in his grave (this is an earth burial). On the lower edge of the painting three men are beating their music sticks together and singing, accompanied by a fourth, blowing his drone tube.[24] Above the grave are four dancing women and, on panel *c*, another line of women singing and dancing. The remainder of the painting deals with the journey of the spirit to Nalkuna, the *jiritja* heaven. This will be described later, p. 529.

Plate 99D pictures a ceremony associated with the second phase of the burial ceremonies of a *dua* man, the cleansing of the bones.

In the centre of the painting is the desiccated body resting on the burial platform (short lines on either side). At *a* his mother, *b* his sister, *c* his wife, are stabbing themselves in the scalp with a bone specially sharpened for the occasion. The blood flowing from each woman is indicated by the adjacent cross-hatching. At *d* and *f*, two *dua* men are beating their music sticks and chanting the burial songs, and at *e* a *jiritja* man is blowing the drone tube.

21. See painted skull, Pl. 101C, E.

22. This design is the same as that painted on the body of the dead man throughout his life.

23. See Milingimbi log coffin, Pl. 105A. Those used at Yirrkalla were longer, simpler and without projecting spikes on top.

24. This is a hollow stick, or sometimes a length of bamboo, about two inches in diameter and up to five feet in length, which is blown like a trumpet. Some investigators call them by the European name of didjeridoo.

MORE RARELY, RESPONSIBILITY FOR FEED-
[465] ing the canoe-maker is assured by the man for whom the
396 work is undertaken. He is paid finally in *gerri*, such as bundles
431
437 of spears, baskets and tomahawks, which again take the form of "goodwill" (*ŋoi ŋämmatirri*) presents rather than payments calculated on the basis of exact economic equivalence. In these transactions, a bargain is rarely struck; the *djärtunmirri* is flattered by the request for his services to cut the canoe, and the *buŋgauwa lippa lippa*, the owner or master of the canoe, seeks to please the craftsman by making liberal gifts to ensure that the *djärtunmirri* is satisfied at
[152] the end of the transaction. For he knows that a man who
[578] harbours resentment will rarely declare this openly, but
[754] that he is likely to brood over it and eventually to seek the aid of a medicine man or sorcerer to avenge the wrong, real or imaginary. Even in this case, to which the name *mälli* is applied, the transaction is far removed from the level of simple purchase. But a big advance has been made in the recognition of craft specialisation and the idea of payment for the work of the specialist.

●313 The responsibility of the owner, *buŋgauwa* (literally
396 master) of the canoe, does not end here. A suitable canoe tree is hard to find and he may be obliged to select a tree some distance from river or sea, and to manhandle the heavy craft on rollers cut for the purpose.

431 The handling and launching of a new canoe is a big
476 ceremonial occasion, and in consequence, a presentation of
396 food is expected of the *buŋgauwa* as a gesture of goodwill to those who assist in the launching of the craft. This again entails work and organisation, and above all, the co-operation of numbers of people, including women, with divergent interests, the whole forming part of an intricate and nicely balanced system of obligation and counter obligation, of gift and counter gift.

15:Chaseling M-5 (ca. 1934-1936)1957
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out it is assumed to be worth while patching him up; his organs are pushed inside and the hot spear-thrower, bark-pulp, and clay-plaster treatment is applied.

Severe constipation, with distended stomach, is known as 'or wah', and for this the leaves of a dry jungle tree are mixed in water and the fluid rubbed over the body. Crushed leaves are inserted in the nostrils and piled on the chest whilst the remaining fluid is poured into the ears. It is said to be essential for the patient to remain supine, so as to allow the fluid to run from the nostrils and ears down through the spinal column into the stomach. A second method is to make a meal from a long, spiral shellfish (*Cerithiedea Telescopium telescopium*) found on the mudflats. It is good food at any time, but it is also regarded as a cure for constipation, in aiding the passage of fibrous foods; it has the smoothness of the oyster and looks like glutinous slime.

A third treatment is carried out by building a low platform of sticks, covering it with swamp grass, placing the patient on top and covering him with sheets of paper-bark. A fire is made under the structure from the wood, leaves, and bark of the 'boit' or iron-wood tree. This particular tree is always used for the fire. (It is the hardest wood I have seen, and when it is being milled severe irritation is caused to both nose and throat.) The patient spends most of the day on the grille, and from time to time is turned over; at sundown he is removed and plunged into a nearby creek or waterhole. Most assuredly he can expect to feel stimulated.

Diarrhoea is not a common ailment, for natural wandering habits reduce the danger of infection. Nevertheless, epidemics do occur, maybe through over-eating a good catch of turtle, or through hunger driving the food-gatherers to eat decomposing fish or meat washed ashore. A succulent herb, 'brokpili', found near fresh water swamps, is then crushed and mixed with water, and the rusty red mixture